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# TB and Tobacco - An Unholy Alliance

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**T**obacco smoking amplifies the negative impact of Tuberculosis (TB) on population health. TB patients who continue to smoke have much worse treatment outcomes than those who quit. On the other hand, TB patients are also more likely to quit than general smokers if given appropriate advice and support. In this editorial, we discuss how smoking worsens TB outcomes, show how simple and cheap interventions can help TB patients quit smoking successfully and suggest how to sustain such measures within a resource-constrained health system.

Until recently, most medical texts on tobacco use did not include TB as a tobacco-related disease. However, by 2010 the global public health community had recognised that TB outcomes are strongly influenced by tobacco use. In 2010, both World Health Organization and the International Union Against TB and Lung Diseases warned against the dangerous interaction between TB and smoking and referred these as the two 'colliding epidemics'.<sup>1</sup> A growing body of evidence demonstrates that people who smoke have approximately twice the risk of acquiring TB infection<sup>2</sup> and developing active TB disease.<sup>3</sup> Smoking in TB patients results in poor treatment outcomes, including TB-related deaths, and increased severity of disease with more cavitory lesions and greater likelihood of hospitalization.<sup>4</sup> Smoking is associated with poorer adherence to anti-TB medicines,<sup>5,6</sup> higher risk of relapse after the initial treatment and the development of multi-drug resistance TB.<sup>7,8</sup> Smokers, due to their longer infectivity period and a higher treatment default rate, are also more likely to transmit TB to others than non-smokers. This interaction between TB and tobacco epidemics is responsible for over 15-20% of TB-related deaths,<sup>9</sup> which could amount to an excess of 40 million TB

deaths by 2050.<sup>10</sup> Given that Pakistan is one of the high-burden countries for TB with a high smoking prevalence, the interaction between TB and tobacco poses a national public health threat.

While smoking in TB patients causes devastating consequences, offering appropriate tobacco cessation support during TB treatment could lead to substantial benefits. Most immunological abnormalities in TB patients induced by smoking tobacco could be reversed within six weeks of quitting.<sup>11</sup> Smoking cessation could reduce the risk of death due to TB by more than half (65%). Moreover, TB patients are more likely to follow cessation advice and succeed in quitting than general smokers.<sup>12</sup> TB patients have an imminent fear of death and the possibility of infecting others. This provides a 'teachable moment' that could be capitalized by the TB health workers by reinforcing benefits of quitting smoking in TB. There is now growing evidence to suggest that brief behavioural interventions could result in substantial number of TB patients quitting smoking permanently. A seminal study (The ASSIST trial),<sup>13</sup> conducted in Pakistan between 2010-2012, found that behavioural support was seven to eight times more successful than usual care in achieving smoking cessation among presumptive TB patients. The study also found that TB diagnosis was the strongest predictor to quit smoking permanently.<sup>14</sup> Other studies have also found that TB patients are highly likely to respond to behavioural support and quit<sup>15</sup> resulting in improved TB treatment adherence and reduced TB treatment failure rates.<sup>16</sup>

Given the benefits of offering cessation support to TB patients, it makes complete sense to provide such interventions as part of routine care within respective TB programmes. In the ASSIST trial, we found that offering behavioural support intervention was highly

cost-effective (10 USD per quit)<sup>17</sup> when delivered by TB DOTS (Directly Observed Treatment Short-course) facilitators - paramedics responsible for registering new TB patients, educating them about TB and ensuring treatment compliance. Another study in Brazil found that TB DOTS paramedics could be trained to deliver smoking cessation support, effectively in a TB clinic.<sup>18</sup> WHO also emphasised that tobacco control activities needs implementing as an integral part of TB case management at primary health care facilities.<sup>1</sup> It is recommended that health facilities record and report smoking status for all patients and healthcare workers are trained to give brief advice on smoking cessation.<sup>19</sup> However, smoking cessation has so far not been integrated within the recording and reporting and supervision and monitoring mechanisms within TB programmes.<sup>20</sup> As a consequence, most TB patients are neither asked about their smoking status nor given any advice in this regard. In conclusion, there is now a substantial body of evidence that links smoking with adverse health consequences for TB patients and shows that continued smoking is counterproductive to their treatment efforts. Furthermore, good evidence on the effectiveness of behavioural support for tobacco cessation in TB patients has emerged in recent years. However, smoking cessation is generally not offered as part of routine TB care even in countries with high TB incidence and high tobacco use. Integrating tobacco cessation within TB programmes offers a viable solution to reduce TB and tobacco-related disease burden. To this effect, we make following recommendations: (a) Develop smoking cessation guidelines for TB programmes; (b) Train TB DOTS workers/providers to record smoking status and to offer brief cessation advice; (c) Mandate recording and reporting smoking status for all TB patients; and (d) Support healthcare workers in quitting smoking themselves.

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